

## REAR MOUNTED ENGINE DESIGN WITH IMPROVED MAINTENANCE ACCESS FOR A MILITARY VEHICLE

### BACKGROUND OF THE INVENTION

#### Field of the Invention

5 The present invention relates generally to military vehicles, and more particularly is a vehicle with a vertically mounted turbine engine situated at the rear end of the vehicle.

#### Description of the Prior Art

Current art vehicles most often have a front end, horizontally mounted engine.  
10 The frontal location exposes the engine to greater hazards, and exposes the crew of the vehicle to the noise and exhaust of the engine. To work on the engine, access is gained either through an access hatch in the top of the vehicle. The operator therefore either has to reach into the hatch and work, or hoist out the engine if large repairs are needed.

In current art vehicles, the engine is mounted in the main part of the vehicle hull.  
15 This is true whether the engine is mounted in the front, back, or middle of the vehicle. Often, the operator has to enter the vehicle interior in order to perform maintenance or repairs. Because of the need for at least some protection of the engine, access is often

limited.

Finally, the horizontal configuration of current art engines requires a significant amount of space for the power plant.

Accordingly, it is an object of the present invention to provide a vehicle with a 5 turbine engine that is mounted on a rear corner of the vehicle.

It is another object of the present invention to provide a vehicle design that separates the crew from the noise, heat and exhaust of the engine.

It is still another object of the present invention to provide a vehicle with improved protection for the engine and associated components.

10 It is yet another object of the present invention to provide a vehicle with direct access to the engine for maintenance and repairs.

## SUMMARY OF THE INVENTION

The present invention is a military vehicle with a turbine engine mounted on an outer rear corner of the vehicle. The engine is installed in a vertical orientation in order 15 to save critical space. The vehicle is provided with access hatches which enable operators to easily work on the engine and related power generation components. The positioning of the engine allows the crew of the vehicle to be shielded from the heat, noise, and exhaust of the engine. The rear positioning of the engine also provides improved survivability of the engine, as well as a reduced heat signature for the vehicle.

20 Finally, the unique engine placement provides easy access for maintenance and removal of components or component modules.

An advantage of the present invention is that the positioning and orientation of the engine reduce space requirements.

Another advantage of the present invention is that the crew of the vehicle is isolated from the engine, which is particularly important in view of the presence of high speed turbine components.

A still further advantage of the present invention is that access to the engine is greatly improved.

These and other objects and advantages of the present invention will become apparent to those skilled in the art in view of the description of the best presently known mode of carrying out the invention as described herein and as illustrated in the drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a rear perspective view of a military vehicle constructed according to the present invention.

Fig. 2 is a rear perspective view of the vehicle with the engine compartment access hatch and the related components compartment access hatch open.

#### DETAILED DESCRIPTION OF THE INVENTION

The present invention is a military vehicle 10 with a turbine engine 12 mounted on a first rear corner 14 of the vehicle. The turbine engine 12 is installed in an engine compartment 16. The engine 12 is installed at the rear of the vehicle 10 to provide the engine 12 with more protection than is available in a forward engine scheme, and to

shield the crew from the noise, heat, exhaust, and moving parts of the engine 12.

The turbine engine 12 is oriented vertically, in order to reduce the critical space requirement. The turbine engine 12 powers an electrical generator 18 that is in communication with one or more electric drive motors via a power cable. The electric drive motors of course drive the wheels 20 of the vehicle 10.

The engine compartment 16 is defined by a hull wall 22 that is open to both a lateral side and a rear side. This arrangement isolates the engine 12 from the personnel area 24 of the vehicle 10. The engine compartment 16 is covered by an access door 26 that swings open to allow easy and direct access to the engine 12 from outside the vehicle 10.

On the rear corner 14 opposite the engine compartment 16, a second compartment 28 is mounted. In the preferred embodiment of the vehicle 10, the second compartment 28 is constructed as a mirror image of the engine compartment 16, the second compartment 28 being defined by a hull wall 22 that is open to both a lateral side and a rear side. The second compartment 28 is also covered by an access door 26. In the preferred embodiment, the supporting components for the turbine (e.g. oil cooler, heat exchanger, etc.) are mounted in the second compartment 28.

The above disclosure is not intended as limiting. Those skilled in the art will readily observe that numerous modifications and alterations of the device may be made while retaining the teachings of the invention. Accordingly, the above disclosure should be construed as limited only by the restrictions of the appended claims.